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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/585,192	06/01/2000	Charles L. Zahm	GEH-01-060	4926

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EXAMINER

BROADHEAD, BRIAN J

ART UNIT PAPER NUMBER

3661

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Per

<b>Office Action Summary</b>	<b>Application No.</b> 09/585,192	<b>Applicant(s)</b> ZAHM ET AL.	
	<b>Examiner</b> Brian J. Broadhead	<b>Art Unit</b> 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 October 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 through 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the originally filed specification for the limitation "wherein the heading is aligned with the direction of travel of the locomotive based on whether the locomotive is orientated in a cab forward or cab reverse orientation of travel".

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, 5-9, 12-16, 19-23, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bidaud, 6347265, in view of Ford, 6211821.
2. Bidaud discloses determining at least one of motion and location parameters of a locomotive on lines 22-34, on column 3; determining track curvature on lines 19-30, on

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column 5; the track curvature is determined from angular rotation and velocity on lines 20-30, on column 5; angular rotation is found from a gyro and vehicle speed from a tachometer on lines 20-30, on column 5; determining position of the locomotive on line 7, on column 5; accessing a track database of heading and grade on lines 1-126, on column 6; sampling latitude and longitude from satellite receivers and determining distance traveled by the locomotive on lines 7-12, on column 5; and using the formula for distance traveled or its equivalent and adding the sampled distances is inherent in Bidaud.

3. Bidaud does not disclose providing at least two satellite signal receivers on the locomotive at spaced locations along the length of the locomotive; determining a set of phase differences between satellite reference signals received by satellite receivers; and determining an accurate heading of the locomotive during normal locomotive transit operation using the set of phase differences between the satellite reference signals, wherein the locomotive is self-propelled or propelled in a consist with other locomotives, wherein the heading is aligned with the direction of travel of the locomotive and based on whether the locomotive is oriented in a cab forward or cab reverse orientation of travel; and determining a vector difference between two antennas mounted to the locomotive.

4. Ford teaches providing at least two satellite signal receivers on the vehicle at spaced locations along the length of the vehicle in figure 4; determining a set of phase differences between satellite reference signals received by satellite receivers on lines 43-50, on column 2; and determining an accurate heading of the vehicle during normal

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vehicle transit operation using the set of phase differences between the satellite reference signals, wherein the vehicle is self-propelled, wherein the heading is aligned with the direction of travel of the vehicle and based on whether the vehicle is oriented in a cab forward or cab reverse orientation of travel on lines 10-44, on column 33; and determining a vector difference between two antennas mounted to the vehicle on line 26, on column 3. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teaching of Ford in the invention of Bidaud because such modification would provide a low cost and reliable alternative to a gyrocompass pair as stated by Ford on line 45, on column 1.

5. Claims 3, 30, 4, 17, 18, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bidaud, 6347265, in view of Ford, 6211821 as applied to claims 1, 2, 15, and 16 above, and further in view of Wilson, 6313788.

6. Bidaud and Ford disclose the limitations as set forth above. They do not explicitly disclose determining  $d$  using the equation in the claims. Wilson disclose using the equations in the claims to determine  $d$  on line 15, on column 9. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the equations of Wilson in the invention of Bidaud and Ford because such modification provides a mathematical way to determine  $d$ , or as more commonly know, the baseline vector.

7. Claims 10, 11, 24, 25, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bidaud, 6347265, in view of Ford, 6211821 as applied to claims 1, 5, 15, and 19 above, and further in view of Kumar, 5896947.

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8. Bidaud and Ford disclose the limitations as set forth above. They do not disclose dispensing a track lubricant in accordance with the determined curvature and when the curvature exceeds a predetermined magnitude, or based on the curvature value contained in a track database. Kumar discloses dispensing a track lubricant in accordance with the determined curvature and when the curvature exceeds a predetermined magnitude on columns 1 and 2. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the curvature calculated by the invention of Bidaud and Ford to dispense the lubricant of Kumar because such modification would provide a source of the curvature value for Kumar. Kumar is silent as to how the curvature value is determined. Bidaud and Ford provide a way to determine curvature through GPS calculations, gyros, or track databases.

***Response to Arguments***

9. Applicant's arguments filed 10-29-04 have been fully considered but they are not persuasive. The argument that it is well known in the art that heading can be aligned to current direction of travel is not convincing. While it may be well known, there isn't a disclosure that it was part of the invention as originally filed.

10. Applicant's arguments, see the amendment, filed 10-29-04, with respect to the rejection under 35 U.S.C. 112, second paragraph have been fully considered and are persuasive. The rejection of claims 1-31 has been withdrawn.

11. Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection. The additional limitation of "the heading is aligned with the direction of travel of the locomotive based on whether the locomotive

is orientated in a cab forward or cab reverse orientation of travel" is disclosed by Ford, as set forth above.

***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 703-308-9033. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 703-305-8233. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

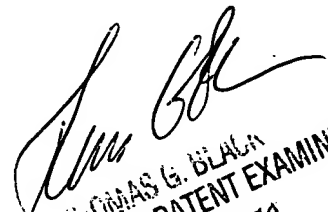
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.



BJB

January 5, 2005



THOMAS G. BLACK  
SUPERVISORY PATENT EXAMINER  
GROUP 3600